

Senate granted the lecturers the utmost liberty, and experimental methods, which could not be learned from books, had been practised at the University for more than a century. Galileo had many opportunities for the development of his genius, both in the lecture-room and in the home, in the preparation of scientific publications, and in the workshops of scientific instrument-makers both in Padua and Venice. To Venice he frequently went, attracted thither by the means it afforded him for study; by that grand arsenal which had already been sung by Dante, and which in his reputed Dialogues is spoken of by Galileo with admiration; but above all by the advantages he derived from scientific intercourse with eminent men who resided in the dominion. The culminating point of the discourse was naturally reached when the orator had to deal with the invention of the telescope, and with the astronomical discoveries made by means of it, the immediate result of which was the recall of Galileo to Tuscany. This did not aid Galileo in his glorious career, or help to protect him from the attacks which were for a long time made on him by invidious adversaries. Even some of his own servants changed at once to implacable and dangerous enemies, and at last he was involved in all the miseries which sprang from the memorable lawsuit. This led the orator to recall the fact that when the clouds assumed their most threatening aspect, the Venetian Republic, forgetting with real magnanimity whatever resentment it might have felt at Galileo's abandonment of his chair at Padua, offered to re-appoint him, and to print at Venice the work which had brought upon him so much trouble. He said also that a pleasant memory of Padua must have passed through the mind of the prisoner of the Holy Office, when there came to him his only comfort, the message from the favourite of his childhood, the nun who in Padua had tenderly cared for him during the first ten years of his youth.

After Prof. Favaro's oration discourses were delivered by the foreign delegates, Holmgren, Fayrer, Darwin, Tisserand, Lampe, Keller, Foerster, Sohncke, Blasing, Lemcke, Farey, Lanczy, Schmourlo, and by Italian delegates, Nardi-Dei, Mantovani-Orsetti, and Del Lungo. Then followed the conferring of University honours, of which seven had been set apart by the Council for seven men of science, one for each nation, all distinguished for their devotion to the studies in which Galileo excelled, viz. Schiaparelli, Helmholtz, Thomson, Newcomb, Tisserand, Bredichir, and Gylden. The degree of philosophy and letters was given to the Minister Martini; of natural philosophy, and philosophy and letters, to the leading delegates. The ceremony was closed by the inauguration of a commemorative tablet in the large hall.

Of the other festivals connected with the celebration it would be out of place to speak here, and it will be better to add a list of the publications which have been issued on the occasion. The oration read in the Great Hall by Prof. Favaro has been published, with the addition of twenty-five facsimiles of documents containing the various decrees of the Senate concerning Galileo, the date of the early prelections given by him at regular intervals, several autographic records of Galileo, chosen in order to give a more exact idea of what are the most precious materials for his biography, the frontispieces of the various publications issued by Galileo, or relating to the time of his sojourn in Padua, the geometric and military compass, the writing presenting the telescope to the Doge, and the first observations of the satellites of Jupiter. A portrait of the great philosopher, from a painting which represents him at the age of forty, taken in 1604, is prefixed.

By favour of the University there have also been published two other works, one containing all the notices of the studies at Padua in 1592, the other proving which

was the house inhabited by Galileo and the place in which he made his astronomical observations. The ancient Academy of Padua, among whose founders Galileo is numbered, has issued a publication in which are collected several works dedicated to his memory; and the students of the University have sought to perpetuate the remembrance of this festival by the publication of a "unique number," bringing together all the documents relating to the sojourn of Galileo in Padua, collected from all quarters. These publications will serve as suitable memorials of a great and most interesting celebration.

ANTONIO FAVARO.

SIR RICHARD OWEN.

IT is with great regret that we record the death of Sir Richard Owen. He died on Sunday, after a lingering illness, at Sheen Lodge, Richmond Park, in his eighty-ninth year. In publishing his portrait in the series of "Scientific Worthies" (*NATURE*, vol. xxii. p. 577) we have already presented an estimate of his work and of his place in the history of science. It is only necessary now, therefore, to recall some of the leading facts of his career.

He was born at Lancaster on July 20, 1804, and received his early education at the grammar school of his native place. Afterwards he matriculated at the University of Edinburgh as a medical student. In 1825 he joined the medical school of St. Bartholomew's Hospital, London, and in 1826 he took his diploma at the Royal College of Surgeons. His professional studies having been completed, he began to practise in Serle Street, Lincoln's Inn Fields; but the bent of his mind was towards purely scientific investigation, and he soon had a good opportunity of exercising his powers. Dr. Abernethy, with whom he had acted at St. Bartholomew's as a dissector, had recognized his ability; and, in accordance with the advice of this famous surgeon, he was invited in 1828 to undertake the task of cataloguing the Hunterian collection at the Royal College of Surgeons. The invitation was accepted, and in 1830 the first catalogue of the invertebrate animals in spirits was published. In the same year Owen read at the first meeting of the Zoological Society's committee of Science a valuable paper on the anatomy of the orangutan, and afterwards he made many important contributions to the Society's Transactions and Proceedings. He was also well known as a reader of papers before the Medical Society of St. Bartholomew's and the Medical and Chirurgical Society of London. In 1832 appeared his well-known essay on the Pearly Nautilus (*Nautilus Pompiilius*), in which he gave most striking proof of his power of interpreting the facts of natural history in a thoroughly philosophical spirit.

Before he was thirty years of age Owen had achieved so good a reputation that in 1834 he was appointed to the newly-established chair of comparative anatomy at St. Bartholomew's Hospital. Two years afterwards he succeeded Sir Charles Bell as professor of anatomy and physiology at the Royal College of Surgeons, and he was elected to the newly-established Hunterian professorship at the Hunterian Museum. He also became conservator of the Hunterian Museum on the death of Mr. Clift, whose daughter he had married. He had gradually been withdrawing from the practice of his profession, and ended by devoting the whole of his time and energy to scientific work.

His connection with the Royal College of Surgeons lasted for twenty years, and during this period he achieved results which placed him in the front rank of original investigators. In the article to which we have referred we have already indicated the nature and importance of these results, and need not go over the same ground again. It must suffice to mention the completion, in five volumes, of his catalogue of the Hunterian

collection; his "Odontography"; his Lectures on Comparative Anatomy and Physiology; his "Archetype and Homologies of the Vertebrate Skeleton"; his memoirs on "The Nature of Limbs" and on "Parthenogenesis"; his monograph of British fossil reptiles; and his papers on the fossil birds of New Zealand, and on some fossil mammals of Australia. In 1856 he was appointed Superintendent of the Department of Natural History in the British Museum. How splendidly he fulfilled the duties of this position all the world knows. He fought steadily and earnestly to obtain proper accommodation for the magnificent collection placed under his charge, and to him, more than to any one, Great Britain owes the fact that this particular set of her scientific treasures is now so securely preserved and so finely displayed. The practical duties of his office were not allowed to interrupt his scientific researches, and year after year he continued to give fresh evidence of the astonishing range of his knowledge and of his remarkable capacity for far-reaching and brilliant generalization. Among the writings of this period are his Manual of Palæontology, and his memoirs on the classification and geographical distribution of mammals, on the British fossil reptiles of the Liassic formations, ichthyosaurs and plesiosaurs, on the British fossil cetacea of the Red Rag, on the British fossil reptiles of the Mesozoic formations, pterodactyls, and on the fossil reptiles of South Africa.

In 1883 he resigned his official position, but he did not cease to interest himself in the studies in the prosecution of which he had displayed so commanding a genius. In 1884 he issued in three volumes his great "History of British Fossil Reptiles," and until a comparatively recent date he submitted to the Royal Society from time to time papers embodying the more important results of his labours.

In the course of his long career Owen did much good service as a member of various Commissions, and it is scarcely necessary to say that honours of many different kinds were conferred upon him. About these matters we have given all necessary information in our previous article. Owen was very far from being content merely with the collection and classification of facts; he sought also to bring out the ideas in which his facts seemed to him to find their ultimate significance. He was unable to adopt the theory of evolution as presented by Darwin, but his researches did much to prepare the way for the general and rapid acceptance of Darwin's hypothesis, since it was felt that there must be some strictly scientific explanation of the affinities by which he had shown vast groups of animal forms to be allied to one another. Apart altogether from its speculative aspects, his work is universally acknowledged to be of high and enduring value, and there can be no doubt that he will rank among the strongest and most impressive figures in the intellectual history of the nineteenth century.

He desired that his body should be buried beside that of his wife in Ham Churchyard, and his wish is, of course, to be complied with. At the funeral, which will take place to-morrow (Friday), there will be representatives of all the learned societies with which he was connected.

NOTES.

THE following memorial, numerously signed, has been presented by Sir Henry Roscoe to the Right Hon. the Earl Cowper, Chairman of the Royal Commission on the Gresham University:—The undersigned desire hereby respectfully to record their strong opinion that the foundation of a Teaching University for London, without due provision being made for higher Education and original Research, would be unworthy of the Metropolis, and would entail the neglect of an admirable opportunity for promoting the advancement of Science and

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Learning. The signatures cannot fail to command attention. The following learned Societies are represented by their Presidents:—The Royal Society, the British Association for the Advancement of Science, the Royal Dublin Society, the Royal Society of Edinburgh, the Iron and Steel Institute, the Physical Society, the Institution of Electrical Engineers, the Institute of Mechanical Engineers, the Chemical Society, the Royal Horticultural Society, the Pharmaceutical Society of Great Britain, and the Institute of Chemistry of Great Britain and Ireland. Eton College, Harrow School, Rugby School, and St. Paul's School are represented by their head-masters. There are also representatives of the University of Oxford, Cambridge, Edinburgh, Glasgow, Aberdeen, and St. Andrews, the Victoria University, the British (Natural History) Museum, the Royal College of Science, London, University College, London, Mason College, Birmingham, Durham College of Science, Firth College, Sheffield, University College, Dundee, University College, Bristol, City and Guilds of London Central Institution, the Royal College of Science, Dublin, and the Pharmaceutical Society of Great Britain. A special group of signatures consists of the names of a number of Fellows of the Royal Society.

SIR JOSEPH LISTER, Sir Henry Roscoe, and Prof. Ray Lankester, will represent the Royal Society at the Pasteur celebration in Paris on the 27th inst. Captain Abney has been invited to represent the Society at the 150th anniversary of the American Philosophical Society in May 1893.

WE are glad to see that a movement has been started for the purpose of securing that due honour shall be done to the memory of Jean Servais Stas, one of the most illustrious of modern chemists. It is proposed that a new edition of his writings shall be issued, his memoirs, notes, and reports being grouped in their proper order, and that a commemorative monument shall also be erected. An influential committee, representing science in all parts of the world, has been appointed to take the necessary steps. Subscriptions will be received by M. L. Errera, 1, Place Stéphanie, Brussels.

THE Committee of the International Electrical Exhibition to be held at Milan in 1894 proposes, according to *La Lumière Electrique*, to offer a prize for the most important invention or discovery in the province of electricity, especially in connection with the transmission of energy to a great distance, and its distribution and transformation for industrial uses.

SUCCESSFUL experiments have been made in France relative to the introduction of telephones for use in warfare. The telephonists are organized in sets of two men, each set being provided with equipment for a mile line. The very simple receiving and transmitting apparatus are attached to the military cap, and the wire is on reels in a sort of breast-plate, the whole being so light that a man's ordinary equipment weighs less than six pounds.

THE tunnel at Niagara Falls is finished, and the power plant will be in operation by next March. It is expected that a current of 45,000 electric horse-power will be transmitted from there to Buffalo, and 30,000 to other points.

M. MAURICE MALLET, in *L'Aéronaute*, describes what he claims to be the longest balloon ascent on record. His balloon, "Les Inventions Nouvelles," started from the gasworks of La Villette, Paris, on October 23, and the voyage terminated at Walhen, in Central Germany, at 6 a.m. on the 25th, after a total journey of 36 hours 10 minutes above ground. The flight was interrupted several times by the snow which fell in the higher regions of the atmosphere. When lower strata were reached, the snow melted, and the balloon regained its ascending power. During one of these descents it was stopped and examined by